Ameir Shaa's Job Description

Context

Urban wind was field modelling using Physics Informed Neural Networks (PINNs) for applications to dispersion studies

Numerical Studies (Phenomenology)

Computational Fluid Dynamics
Code-Saturne will provide the data typically - for a given topography
run 18 simulations at different inlet angles and a given wind speed

Regression

- with Neural Networks and Regularization
    - Div \vec{V} = O
    - RANS (Reynolds Averaged Navier Stokes)

- Assess results and compare with polynomial regression done by Paco, Amin and Boris
- Quick decision on which regression model is the most efficient

Experimental

- Preparing the experimental campaign which includes deciding on types of sensors (LIDAR, drones, anemometers)
- Performing simulations
- Deciding where to place sensors

Theory

- Reduced model for Navier-Stokes equations and RANS
- Capturing the Reynolds Stress Tensor into the Neural Network

Co-Supervisor

TBD